

10/506994

What is claimed is:

1. A sheet extrudate with at least one surface which has self-cleaning properties
- 5 wherein  
the synthetic polymer surface of the sheet extrudate (X) has at least one securely anchored layer of microparticles (P) which have hydrophobic properties and have from primary particles combined to give
- 10 agglomerates or aggregates whose size is from 0.2 to 100  $\mu\text{m}$ , which form elevations having an average height of from 20 nm to 25  $\mu\text{m}$  and an average separation of from 20 nm to 25  $\mu\text{m}$ , where the microparticles (P) have been directly anchored within the synthetic polymer
- 15 surface (X) and have not been linked via a carrier material.
2. The sheet extrudate as claimed in claim 1, wherein
- 20 the elevations have an average height of from 50 nm to 4  $\mu\text{m}$  and/or an average separation of from 50 nm to 4  $\mu\text{m}$ .
3. The sheet extrudate as claimed in claim 1 or 2,
- 25 wherein  
the microparticles have been selected from particles of silicates, minerals, metal oxides, metal powders, silicas, pigments, and polymers.
- 30 4. The sheet extrudate as claimed in any of claims 1 to 3, wherein  
the microparticles have been selected from particles of fumed silicas, precipitated silicas, aluminum oxide,
- 35 mixed oxides, doped silicates, titanium dioxides, and pulverulent polymers.

O.Z. 6000-WO

## ART 34 AMDT

5. The sheet extrudate as claimed in claim 4,  
wherein  
the microparticles are hydrophobicized fumed silicas.

5 6. The sheet extrudate as claimed in any of claims 1  
to 5,  
wherein

the sheet extrudate itself comprises a material  
selected from polycarbonates, polyoxymethylenes,  
10 polyacrylates, polymethacrylates, polyamides, polyvinyl  
chloride, polyethylenes, polypropylenes, aliphatic  
linear or branched polyalkenes, cyclic polyalkenes,  
polystyrenes, polyesters, polyacrylonitrile,  
polyalkylene terephthalates, and polyvinylidene  
15 fluoride, or comprises other polymers from  
polyisobutene, poly-4-methyl-1-pentene, and  
polynorbornene, in the form of homo- or copolymer, or  
else comprises a mixture of these.

20 7. The sheet extrudate as claimed in any of claims 1  
to 6,  
wherein  
the microparticles have been anchored with from 10 to  
90% of their average particle diameter within the  
25 surface.

8. A process for producing sheet extrudates as  
claimed in any of claims 1 to 7 with at least one  
surface which has self-cleaning properties and has  
30 elevations formed by microparticles,  
which comprises  
impressing microparticles which have hydrophobic  
properties and have combined from primary particles to  
give agglomerates or aggregates whose size is from 0.2  
35 to 100  $\mu\text{m}$ , by means of a roll, into the surface of the  
melt of a sheet extrudate, where this melt has not yet  
solidified, and where more than 50% of the

AMENDED SHEET

O.Z. 6000-WO

microparticles are impressed only to the extent of 90% of their diameter into the surface of the sheet extrudate.

5 9. The process as claimed in claim 8,  
wherein

the sheet extrudate comprises a polymer based on polycarbonates, on polyoxymethylenes, on polyacrylates, on polymethacrylates, on polyamides, on polyvinyl  
10 chloride, on polyethylenes, on polypropylenes, on aliphatic linear or branched polyalkenes, on cyclic polyalkenes, on polystyrenes, on polyesters, on polyacrylonitrile, or on polyalkylene terephthalates, or on polyvinylidene fluoride, or comprises other  
15 polymers from polyisobutene, poly-4-methyl-1-pentene, and polynorbornene, in the form of homo- or copolymer, or else comprises a mixture of these.

10. The process as claimed in claim 8 or 9,  
20 wherein

the microparticles are impressed into the surface of the sheet extrudate by means of a roll for smoothing the sheet extrudate.

25 11. The process as claimed in any of claims 8 to 10, wherein,  
prior to impression into the sheet extrudate, the microparticles are applied to the surface of the roll used to impress the microparticles.

30 12. The process as claimed in claim 11, wherein  
the microparticles are sprayed onto the roll.

35 13. The process as claimed in at least one of claims 8 to 12, wherein

O.Z. 6000-WO

the roll has a temperature of from 20 to 150°C.

14. The process as claimed in at least one of claims 8 to 13,

5 wherein

use is made of at least two rolls, and hydrophobic microparticles are impressed into the surface of the sheet extrudate on two sides of the sheet extrudate.

10 15. The process as claimed in at least one of claims 8 to 14,

wherein

use is made of microparticles selected from silicates, minerals, metal oxides, metal powders, silicas,  
15 pigments, and polymers.

16. The process as claimed in claim 15,  
wherein

microparticles composed of hydrophobicized fumed  
20 silicas are used.

17. A film with a surface which has self-cleaning properties and has surface structures with elevations, the production process being as claimed in any of  
25 claims 8 to 16.

18. A sheet with a surface which has self-cleaning properties and has surface structures with elevations, the production process being as claimed in any of  
30 claims 8 to 16.